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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/738,855	12/18/2000	Toshiyuki Toyoshima	400846	1677

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EXAMINER

CHANG, RICK KILTAE

ART UNIT PAPER NUMBER

3729

DATE MAILED: 04/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/738,855

Applicant(s)

TOYOSHIMA ET AL.

Examiner

Rick K. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 21 is/are pending in the application.
- 4a) Of the above claim(s) that are not recited in item 6 below is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibashi et al (US 5,858,620) in view of Shinogi et al (US 6,479,900), and further in view of Endo et al (US 5,777,027) and Tsukada et al (US 6,378,201).

Ishibashi discloses the claimed invention in Figs. 1a-1b and 2a-2f and a water-soluble polyvinyl acetal.

Ishibashi fails to disclose providing a photosensitive resin, polyvinyl acetal is a curable resin, filling the vias with conductive material and forming wiring patterns on the cured thin film.

Endo discloses polyvinyl acetal is a curable resin (title).

Tsukada discloses providing a photosensitive resin (Abstract).

Shinogi discloses filling the vias with conductive material (Fig. 4) and forming wiring patterns on the cured thin film (Fig. 8 shows M is patterned).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ishibashi by filling the via with conductive material, as taught by Shinogi, for the purpose of electrically communicating between selected different circuit layers and forming mounting pads for attaching electronic components.

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Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ishibashi by polyvinyl acetal is a curable resin, as taught by Endo, for the purpose forming cross-linking.

In addition, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ishibashi by providing a photosensitive resin, as taught by, for the purpose of forming via holes using conventional photolithographic techniques.

3. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibashi et al (US 5,858,620)/Shinogi et al (US 6,479,900)/Endo et al (US 5,777,027)/Tsukada et al (US 6,378,201) as applied to claim 1 above, and further in view of Rokugawa (US 6,434,819).

Ishibashi/Shinogi/Endo/Tsukada discloses a water-soluble polyvinyl acetal.

Ishibashi/Shinogi/Endo/Tsukada fail to disclose epoxy resin.

Rokugawa discloses epoxy resin (16) thereby easily cured by heating and irradiated by a laser beam to form vias or recesses.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ishibashi/Shinogi/Endo/Tsukada by providing epoxy resin, as taught by Rokugawa, for the purpose of easily cured by heating and irradiated by a laser beam to form vias or recesses.

4. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibashi et al (US 5,858,620)/Shinogi et al (US 6,479,900)/Endo et al (US 5,777,027)/Tsukada et al (US 6,378,201) as applied to claim 1 above, and further in view of Lubert et al (US 6,618,940).

Ishibashi/Shinogi/Endo/Tsukada fail to disclose providing the insulating layer having a thickness in a range from 5 μ m to 70 μ m.

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Lubert discloses providing the insulating layer having a thickness in a range from 5 μ m to 70 μ m (31 in Fig. 8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ishibashi/Shinogi/Endo/Tsukada by providing the insulating layer having a thickness in a range from 5 μ m to 70 μ m, as taught by Lubert, for the purpose of forming desired wiring pattern thickness.

Response to Arguments

5. Applicant's arguments filed 3/15/04 have been fully considered but they are not persuasive.

There is no PTO-1449 in the case. Please resubmit for consideration.

Ishibashi does not disclose the exact terms "a photosensitive resin"; therefore, the Examiner found a reference that clearly states the exact terms "a photosensitive resin" for the purpose as shown above in the rejection.

Shinogi discloses forming wiring patterns as disclosed above in the rejection.

Interviews After Final

6. Applicant note that an interview after a final rejection must be submitted briefly in writing the intended purpose and content of the interview (the agenda of the interview must be in writing). Upon review of the agenda, the Examiner may grant the interview if the examiner is convinced that disposal or clarification for appeal may be accomplished with only nominal further consideration. Interviews merely to restate arguments of record or to discuss new limitations will be denied. See MPEP 714.13 and 713.09.

Conclusion

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7. **Applicants are duly reminded that a full and proper response to this Office Action that includes any amendment to the claims and specification of the application as originally filed requires that the applicant point out the support for any amendment made to the disclosure, including the claims. See 37 CFR 1.111 and MPEP 2163.06.**

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

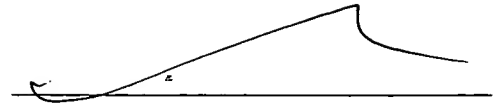
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick K. Chang whose telephone number is (703) 308-4784. The examiner can normally be reached on 5:30 AM to 1:30 PM, Monday through Thursday.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9302 for regular communications and (703) 872-9303 for After Final communications.

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RICHARD CHANG
PRIMARY EXAMINER

RC

April 21, 2004